

**Claims**

1. A washcoating process for production of a monolithic catalyst comprising  
5 preparing a monolithic structure,

preparing a catalytic washcoat composition comprising a mixture of a binder system with a catalytic material, wherein the binder system comprises a dual sol binder,

coating the monolithic structure with the catalytic washcoat composition, and

drying the coated monolithic structure,  
wherein the dual sol binder comprises a silica sol and an alumina sol and wherein the ratio of the silica to the alumina in the dual sol binder is from about 6:1 to about 1:3.

2. The process of Claim 1 wherein the ratio of the silica to the alumina is from about 6:1 to about 3:1.

3. The process of Claim 1 wherein the pH of the dual sol binder is from about 1 to about 10.

20 4. The process of Claim 1 wherein the pH of the dual sol binder is from about 3 to about 6.

5. The process of Claim 1 wherein the catalytic material comprises a zeolite.

25 6. The process of Claim 1 wherein the catalytic material comprises a metal-exchanged zeolite.

7. The process of Claim 1 wherein the catalytic material comprises a copper-exchanged zeolite.

8. The process of Claim 1 wherein the catalytic material comprises a copper-exchanged ZSM-5 zeolite.

5 9. A washcoating process for production of a monolithic catalyst comprising

preparing a monolithic structure,

10 preparing a catalytic washcoat composition comprising a mixture of a binder system with a catalytic material, wherein the binder system comprises a dual sol binder,

15 coating the monolithic structure with the catalytic washcoat composition without adding any additional additives to the solution to enhance adhesion of the catalytic washcoat composition to the monolithic structure, and

20 drying the coated monolithic structure,

25 wherein the dual sol binder comprises a silica sol and an alumina sol and wherein the ratio of the silica to the alumina in the dual sol binder is from about 6:1 to about 1:3.

10. The process of Claim 9 wherein the ratio of the silica to the alumina is from about 6:1 to about 3:1.

11. The process of Claim 9 wherein the catalytic material comprises a zeolite.

12. The process of Claim 9 wherein the catalytic material comprises a metal-exchanged zeolite.

13. The process of Claim 9 wherein the catalytic material comprises a copper-exchanged zeolite.

5        14. A process for the reduction of NO<sub>x</sub> in a feed stream comprising passing the feed stream over the monolithic catalyst produced by the process of Claim 1.

15. A process for the reduction of NO<sub>x</sub> in a feed stream comprising passing the feed stream over the monolithic catalyst produced by the process of Claim 9.

16. A catalytic washcoat composition for coating monolith structure comprising

            a binder system and a catalytic material, wherein the binder system comprises a dual sol binder, wherein the dual sol binder comprises a mixture of a silica sol and an alumina sol and wherein the ratio of the silica to the alumina in the dual sol binder is from about 6:1 to about 1:3.

20        17. The composition of Claim 16 wherein the ratio of the silica to the alumina is from about 6:1 to about 1:3.

18. The composition of Claim 16 wherein the catalytic material comprises a metal exchanged zeolite.

19. The composition of Claim 16 wherein the catalytic material comprises a copper-exchanged zeolite.

20. The composition of Claim 16 wherein the catalytic material comprises a copper-exchanged ZSM-5 zeolite.